

REMARKS

Claims 1, 2, 17, and 32-34 as amended, are pending for the Examiner's review and consideration. Claims 18, 19, 21, 22, 25, 31, and 38-46 are currently withdrawn but should be rejoined and allowed upon the allowance of claim 1. Claim 1 has been amended to clarify that the relief patterns include a plurality of recesses that hold the fluorescent information storage material used to encode information. Also, claim 1 has been re-organized to more clearly set forth the novel method steps that are recited. Support for these amendments, appear throughout the specification and for example, at paragraph [0022]. Since these amendments do not introduce new matter, these changes should be entered at this time to place the application in condition for allowance.

Claims 1, 2, and 32 were rejected under 35 U.S.C. § 103(a) as being obvious over International Publication No. WO 98/50914 to Glushko et al. ("WO Glushko") in view of either Japanese Patent No. JP 03-173954A to Otaki ("Otaki") or U.S. Patent No. 6,023,451 to Kashiwagi et al. ("Kashiwagi"), and further in view of U.S. Publication No. 2002/0066528 to Oxman et al. ("Oxman") and U.S. Patent No. 5,120,811 to Glotfelter et al. ("Glotfelter") for the reasons set forth on pages 2-6 of the Office Action.

WO Glushko relates to methods for manufacturing a three-dimensional optical memory device formed of a plurality of spaced-apart data layers that includes the steps of (1) forming an upper surface of each of the substrates with a pattern comprising a plurality of regions which are capable of obtaining, when covered by a recording medium, desired optical properties different from those of the substrate; (2) coating the patterned surface of the substrate with the recording medium; (3) removing the recording medium from the patterned surface after the recording regions have obtained the desired optical properties; and (4) providing an attachment between the data layers (Page 4, lines 12-25). The substrate layer is formed of a liquid photopolymer (Page 6, lines 3-4).

Otaki describes how to produce a resin film by irradiating at least the outer peripheral positions of the resin film with UV rays throttled to a beam shape and scanning the beam in a circumferential direction, thereby curing the resin film (Abstract).

Kashiwagi relates to optical recording mediums and describes how to produce such a medium. A thin plate substrate is disposed on a rotation mount through the liquid

ultraviolet curing resin, and the stamper on which the thin plate substrate is laminated is rotated to draw the liquid ultraviolet curing resin to obtain a desired thickness (Col. 10, lines 49-54).

Oxman relates to a method of laminating structures, including data storage disks, that include at least two layers and a photopolymerizable adhesive composition between the layers (Abstract). The adhesive composition can include glycidyl ethers, epoxides, or a mixture of both (Paragraphs [0090]-[0099]). These adhesive compositions are used to stick the two layers together.

Glotfelter relates to coating compositions that provide stain and gloss protection (Col. 1, lines 10-15).

WO Glushko, Otaki, and Kashiwagi do not disclose a first compound having at least one glycidyl ether functionality that is polymerizable by hybrid mechanism, and a second compound having an epoxy group that is polymerizable by cation mechanism. In an attempt to remedy this deficiency, the Office Action relies on Oxman for such a teaching. This is clearly a hindsight reconstruction of the prior art. Oxman discloses the use of these compounds in *adhesive* compositions, which are used to bond different articles to a variety of substrates using actinic radiation in the visible or near infrared range (Paragraph [0075]). Generally, to adhere two discs together, the adhesive is placed around the edges of the disk, where the recording medium is not present. In contrast to Oxman, claim 1 recites a glycidyl ether and epoxide that are used to prepare a fluorescent filling composition that is deposited in the pits or recesses of a fluorescent information layer, *i.e.*, the recording medium. Thus, the ether and epoxide are present in the recording medium rather than to adhere two discs together at their peripheries. Instead, these compounds are simply used to adhere the filling composition into the pits or recesses on the substrate after photosolidification.

In addition, Oxman does not disclose or teach a mixture of the first and second compounds in the amounts recited in the claims. Oxman teaches one or more epoxy resins blended together, and that the different kinds of resins can be present in any proportion (Paragraph [0099]). This certainly does not teach a skilled artisan how to formulate the appropriate composition for use in adhering fluorescent material into the pits or recesses of the layer as recited in the present method claims. Nor is such a composition derivable by routine experimentation due to the substantial differences in the purposes of the methods of the prior art compared to those that are presently claimed in this application. Joining two layers together is a

different operation than filling pits or recesses. This different operation in the present invention requires preparing a particular composition as claimed, and as Oxman or the other prior art references do not fill pits or recesses as claimed they would have no reason to formulate such a composition.

For this reason, Oxman does not teach or suggest a *filling composition* that includes a first compound having at least one glycidyl ether functionality that is polymerizable by hybrid mechanism in an amount of 0.1-85 wt% of the polymerizable substance or a second compound having an epoxy group that is polymerizable by cation mechanism in an amount of 5-90 wt% of the polymerizable substance. WO Glushko, Otaki, Kashiwagi, and/or Glotfelter also do not disclose such a composition so that the combination of references does not result in what is claimed in the present methods. Accordingly, claims 1, 2, and 32 are not obvious over the prior art of record, and Applicants respectfully request that this rejection be withdrawn.

Claim 33 was rejected under 35 U.S.C. § 103(a) as obvious over WO Glushko in view of either Otaki or Kashiwagi, further in view of Oxman and Glotfelter, and further in view of U.S. Patent No. 6,355,754 to Olson et al. ("Olson") for the reasons set forth on pages 6 and 7 of the Office Action.

Olson provides polymerizable compositions having a high index of refraction, and preferably, high index of refraction polymerizable compositions that can be processed at temperatures at or near room temperature to produce a polymer or polymeric material (Col. 1, lines 55-61). The polymerizable composition contains brominated, high index of refraction monomers, and in particular alkyl-substituted brominated phenolic (meth)acrylate monomers (Col. 1, lines 61-66).

Claim 33 depends from claim 1, which has already been shown to be non-obvious over WO Glushko in view of either Otaki or Kashiwagi, and further in view of Oxman and Glotfelter. Olson does not remedy this deficiency. Accordingly, Applicants respectfully request that this rejection under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Claim 34 was rejected under 35 U.S.C. § 103(a) as obvious over WO Glushko in view of either Otaki or Kashiwagi, further in view of Oxman and Glotfelter, and in further view of U.S. Patent No. 4,407,855 to Russell ("Russell") and U.S. Patent No. 5,194,490 to Suga et al. ("Suga") for the reasons set forth on pages 7-9 of the Office Action. Russell and Suga are relied

on for teaching a polymerizable composition doped with 4% benzoyl peroxide and 0.1% dibutylaniline.

Russell relates to radiation curable coating compositions which when cured form highly abrasion resistant coatings for most any substrate (Col. 1, lines 10-13). The curable compositions include pentaerythritol-based polyacrylates and polymethacrylates, such as polyacrylates and polymethacrylates of pentaerythritol like the tri- and tetra-acrylates and methacrylates of pentaerythritol, polyacrylates and methacrylates of di- and tri-pentaerythritols like dipentaerythritol penta- and hexa-acrylate and dipentaerythritol penta- and hexa-methacrylate and tripentaerythritol octa-acrylate and methacrylate as well as mixtures of the above polyacrylates and polymethacrylates (Col. 3, lines 9-19). A photoinitiator is added to the composition to initiate crosslinking or curing upon irradiation (Col. 2, lines 38-39). Small amounts of a peroxide such as benzoyl peroxide may act as a photoinitiator by initiating crosslinking or curing of the compositions (Col. 2, lines 47-49).

Suga describes a preparation process of a polymeric solid electrolyte which gives a desired curing rate after mixing component A with component B and additionally can also control with ease an initial curing rate that can be provided in the entire absence of a solvent which remains after finishing the polymerization reaction and is required to be removed (Col. 1, lines 50-57). Radical polymerization promoters include anilines (Col. 3, line 24) and benzoyl peroxide (Col. 5, lines 10-11).

Claim 34 depends from claim 1, and because claim 1 is not obvious over WO Glushko in view of either Otaki or Kashiwagi, and further in view of Oxman and Glotfelter, claim 34 is also not obvious over the references. Russell and Suga do not remedy the deficiency of the disclosure of the cited references. Accordingly, Applicants respectfully request that this rejection under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

In view of the above, it is clear that all obviousness rejections have been overcome and should be withdrawn. Accordingly, Applicants respectfully submit that the claims are patentably distinct from the cited references so that all rejections under 35 U.S.C. § 103(a) should be reconsidered and withdrawn.

Accordingly, the entire application is now in condition for allowance, early notice of which would be appreciated. Should the Examiner not agree with the Applicants' position, then a personal or telephonic interview is respectfully requested to discuss any remaining issues and expedite the eventual allowance of the application.

Respectfully submitted,

10/27/06

Date



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